Welcome to VS 265: Neural Computation

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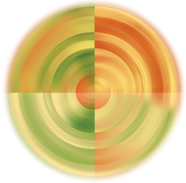

REDWOOD CENTER
for Theoretical Neuroscience

Course goals & topics

This course provides an introduction to theories of neural computation, with an emphasis on the visual system. The goal is to familiarize students with the major theoretical frameworks and models used in neuroscience and psychology, and to provide hands-on experience in using these models.

Topics include:

i. Introduction to Computational Neuroscience

ii. Biophysics of Neural Computation

iii. Sensory Coding

iv. Representation Learning

v. Probabilistic Models & Attractor Dynamics

vi. Computing with Distributed Representations

Course resources, grading, logistics

Class meets Tuesday/Thursday 3:30-5:00

All course materials can be found on course website:

`https://redwood.berkeley.edu/courses/vs265/`

Including:

- Syllabus
- Grading
  - Problem sets (60%) — First set released next Tuesday
  - Final project (40%)
- Link to Piazza discussion forum

https://redwood.berkeley.edu/courses/vs265/

Readings for next class

Can be found on course website

Two required readings

- **Dreyfus & Dreyfus:** *Making a Mind vs. Modeling the Brain: Artificial Intelligence Back at a Branchpoint.*
- **Mitchell, M.:** *Why AI is harder than we think*

Additional background reading:

- **Nicholls et al.:** *From Neuron to Brain* (good intro to neuroscience)
- **Kandel and Schwartz et al.:** *Principles of Neural Science*

Introductions

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Ice-breaker

Find 1-2 people you don't already know, and re-introduce yourself! Then discuss:

- What do you think "neural computation" is about?

- What topics are you hoping to learn more about?

See you next week